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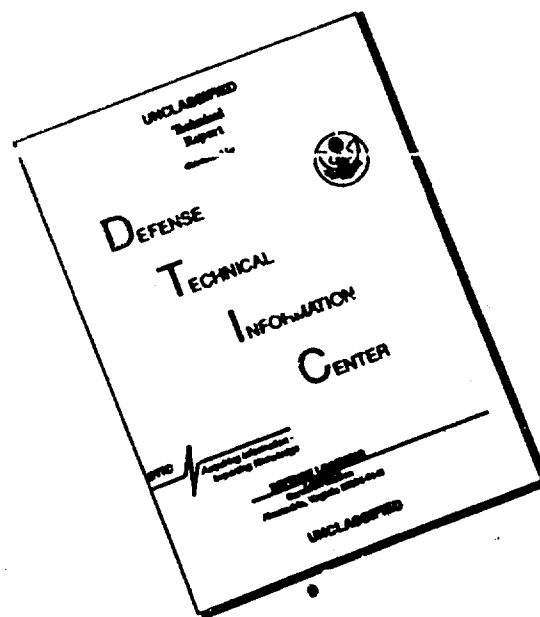
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This translation will form part of an Appendix to
T. W. Robinson's forthcoming RM on "Game Theory and
Politics: Some Soviet Views."

In the present epoch the problem of war and peace, always occupying an important place in people's lives, has become one of the central problems of mankind. Today it assumes the form of an alternative: either progressive development of peoples in the conditions of peace, or a catastrophic thermonuclear war threatening the very foundations of civilization.

Marxist sociology, naturally, devotes special attention to this problem. An important aspect of scientific analysis of the problem of war and peace is critique of those pseudo-scientific concepts of contemporary bourgeois sociologists which justify the policies of position of strength and balancing on the brink of war.

The aim of the present article is to critically examine the concepts of the so-called 'professional strategists.' This designation encompasses a group of American bourgeois sociologists, closely connected with the U.S. military-political apparatus. The researches of the "professional strategists" are carried out on the orders of the Defense Ministry and the State Department, and their recommendations influence the formation of the military-strategic and foreign policy course of the government. The "professional strategists" close practical and ideological intimacy with military circles has permitted their designation as the "new civilian militarists" (see, for example, I. L. Horowitz. The War Game: Studies of the New Civilian Militarists, N.Y., 1963). As concerns the methods of research, at the basis of the "professional strategists" concepts lies speculation on the mathematical theory of games.

The theory of games, which is often called the theory of strategic games, is a new area of mathematics, since pure games of chance and games of skill do not enter into the subject matter of its study. To a considerable extent, the term "game" is employed qualifiedly, since the object of the theory reaches far outside the framework of simple entertainment and generally encompasses any conflict of interests. The theory of games is understood to be a discipline that studies mathematical models of so-called conflict situations. These are situations where the two or more sides present pursue (at least partially) contradictory goals, [and where] the result of the actions of each side depends on the line of action chosen by the opponent. The aim of the theory of games is to give recommendations for rational conduct in that sort of a conflictual situation. The theory of games has had successful application in various areas of science, technology, economics, and military affairs. Even certain aspects of man's struggle with nature can be successfully modelled by its means. Thus, the fruitfulness and usefulness of the theory of games cannot be doubted. This, however, cannot be said about the sort of application to analysis of international conflict which it has received at the hands of modern bourgeois sociologists. (We note that in the area of Marxian critical analysis of bourgeois game theoretic concepts of international conflict, only the first steps have been taken. See, for example, G. Gerasimov's article "The Theory of Games and International Relations" in the journal Mirovaia Ekonomika i Mezhdunarodnye Otnosheniia [World Economy and International Relations], No. 7, 1966).

The first attempts of a game theoretic approach to the study of international conflict were based on the two person zero-sum game theory. The two person zero-sum game is understood as a conflict situation model in which the interests of the two participants are diametrically opposed, i.e., the win of one exactly equals the loss of the other, and therefore the sum of wins always equals zero. Such a game is also called a game of strict rivalry: any common interest, agreement, or cooperation between its players is ruled out. Naturally, approaching international relations with the yardstick of the game of strict rivalry leads to negating the possibility of peaceful coexistence and rules out all methods of solving the conflict of the two systems except through a total military clash.

However, to the extent that the new correlation of forces in the world arena and the qualitative change in the means of conducting war are becoming ever more clearly apparent, even the bellicosely disposed "professional strategists" are compelled to admit that a global military encounter can no longer serve as a means for solving international arguments. In these circumstances, an ever greater number of bourgeois sociologists recognize the inadequacy of the international conflict model based on the two person zero-sum game theory, reject it, and turn to the area of non-zero sum games. "Since the demise of American nuclear monopoly," notes A. Rapoport, "the non-zero-sum aspects of the global strategy [Rapoport: struggle^{*}] have forced

* Brackets in the text of the citations are used throughout to correct deviations of the Russian translation from the original English text. L.D.

themselves on the strategists. Statements to the effect that no one can win a nuclear war appear in practically all the writings of the past five years or so, even in the writings purporting to show how such a war can be won" (A. Rapeport, Strategy and Conscience, N.Y., 1964, p. 110).

Among the various attempts to construct a model of international conflict based on non-zero-sum game theory, a particular reputation and recognition among bourgeois sociologists is presently enjoyed by Professor T. Schelling's model, as set forth by him in his book The Strategy of Conflict (T. C. Schelling: The Strategy of Conflict, Cambridge, Mass., 1960) and subsequently elaborated in detail in a number of other works. J. Bernard thinks, for instance, that "the biggest 'news' in the theory of conflict [in the last few years] is, perhaps, the revolutionary breakthrough of T[homas C.] Schelling in the conceptualization of game theory and its transformation into a theory of social interaction" (J. Bernard: "Some Current Conceptualizations in the Field of Conflict," American Journal of Sociology, No. 4, 1965, p. 444). This assessment coincides with the opinion of the journal The Annals of the American Academy [of Political and Social Science] which states in its review that in the area of international conflict "the author's analysis goes considerably beyond the limits of that which has been done earlier. This is the best, most penetrating and most stimulating book on the given subject" (cited from the cover of T. C. Schelling, op. cit., 1963 edition). It should be noted also that T. Schelling is not only an important but also a sufficiently characteristic figure

among the "professional strategists." The basic conclusions in the area of international conflict and the general methodological features of his conception are typical of the present state of the trend under discussion. All this justifies a special examination of Schelling's conception.

According to Schelling, his book The Strategy of Conflict is a "mixture of pure and applied research" (op. cit. [1960 edition], p. vi). Schelling first creates a certain abstract theory of the non-zero-sum game situation, which he terms a mixed-motive game, and, second, applies this abstract theory to the study of modern international conflict. Both of these aspects are joined in a clearly obvious way, but in a critical analysis it is necessary to separate them, since they are different in content and merit different evaluations. Having this in mind, we will first examine Schelling's abstract theory and, following that, its application.

By a mixed-motive game Schelling understands a situation where, in addition to the opposition of interests between the players, there is also present a certain common interest. The boundary cases in such a situation are pure conflict and pure cooperation. The first variant is studied by the classical theory of zero-sum games, while the second is specially studied by Schelling, since the analysis of pure cooperation throws light on the general case of the mixed-motive game.

In any game which includes common interests, it is necessary to coordinate the players' intentions. In the example of situations of pure cooperation, Schelling shows that players can to a certain degree coordinate

their intentions, even if communication between them is impeded or altogether absent. In the latter case, the means for achieving coordination is the so-called focal point, i.e., a certain unique feature of the situation which both players assume the other can recognize and take into account. Let us assume, for example, that two parachutists have been dropped in different parts of an unfamiliar locality and must meet each other. Neither one knows where the other is, and there is no prior agreement between them regarding the meeting place; however, both know that they have identical maps of the locality on which, among various unspecified details, an isolated house stands out. Experiments have proved that, in this situation, in the majority of cases the meeting does take place and, as a rule, at the house which represents the focal point. If communication is impeded to the extent where players cannot talk to each other, but still can follow the partner's moves, then, apart from the focal point, the moves themselves can be used as a means for obtaining coordination of intentions. This is because the moves contain definite information about the intentions of the player, the system of his preferences, and so forth.

The study of pure cooperation has a secondary role in Schelling's abstract theory, and the key object of study is the mixed-motive game, which he has named the "bargaining" [game]. In this context, Schelling examines the concepts of commitment, promise, communication, and threat. But the latter concept dominates, so that the whole abstract "bargaining" theory amounts essentially to a threat theory.

In essence, Schelling formulates a new approach to the game theoretic problem of threat. Usually it was thought that threatening is followed by an action causing worse damage to the opponent than to the threatener (this is the opinion of H. Raiffa, R. Luce, M. Kaplan and others). Schelling rejects the criterion of comparative utility. In place of the principle "this will hurt you more than it hurts me," he admits threat according to the principle "even if it is bad for me, nevertheless it will not be good for you either." In using this approach, the basic task consists in making the threat credible: the opponent must believe that the threatener will proceed to carry out the threat even in the case where this causes significant damage to himself. Schelling proposes a number of ways of solving this task. One is that the player declaring the threat binds himself to an obligation from which it is impossible to retreat. For instance, in a society where the custom of taking an oath is tantamount to an unbreakable law, it suffices to swear that the oath will be carried out. Another way is irrational conduct: having observed the actions of the threatener, the opponent must arrive at the understanding that in order to carry out the threat the former is prepared to take any rash step which would cause significant damage to himself. "For maximum threat credibility," Schelling states, "it is essential to leave as little room as possible for judgment or discretion [in carrying out the threat]" (*ibid.*, p. 39 [should read p. 40]). It is true that if the threatener has previously recommended himself as a careful and reasonable person, he will not himself be in a position to adopt the tactics of irrational

behavior. In this case, Schelling proposes resorting to the method of delegating, whereby the move which carries out the threat is entrusted to a third party outside the control of the threatener and known to be sufficiently irrational or unrestrained. However, the threat is made credible also by introducing a rational agent if he is materially or in any other way interested in carrying out the threat. It is precisely in this manner, says Schelling, that some prison authorities are acting when they entrust sadists with the supervision of prisoners. To demonstrate the threatener's resolve, breaking off the channels of communication after transmitting the ultimatum is also proposed. Finally, in Schelling's opinion, often the threat can be made credible if the declaration of threat is accompanied by carrying out a part of it. In cases where such a proposed splitting up of the threat cannot be realized by ordinary division, the desired goal can be attained with the assistance of the mechanism of chance. To illustrate this, Schelling adduces the example of a bandit who attempts to rob the driver of a moving car by threatening him with a gun. To escape being robbed, the driver can resort to threat and state that he will kill both of them if the robber does not throw out the gun. His threat will appear more credible if, simultaneously with that declaration, he accelerates to the point where a real danger of a crash, and both of them perishing, arises. Essentially the situation is such that the driver carried out part of the threat, thus consciously creating a certain credibility of a crash. Here risk serves the role of the chance mechanism dividing, as it were, the threat in parts.

Within the framework of the "bargaining game," Schelling examines one more case of the mixed-motive game, the situation of mutual distrust. The essence of this situation is illustrated by the following example. A homeowner comes out because of a suspicious noise and encounters a burglar. If both of them are armed, there is the danger of an outcome which probably neither one of them wants. Even if the thief simply wants to leave, and inwardly the homeowner wishes for the same, there is the danger that the thief could think that the homeowner wants to shoot and therefore would hasten to shoot first. The situation is further complicated by the fact that the homeowner has an analogous motivation. Studying the problem of how to achieve stability in game theoretic situations of this type, Schelling proposes depriving the players of first-move privileges. In the given illustration this is tantamount to replacing the ordinary weapons both have with ones which do not kill instantly and which therefore permit each of the antagonists to reply to a sudden attack by the other.

Concluding the summary of the basic features of Schelling's mixed-motive game theory, one must note its essential difference from traditional game theory. The latter assigns an "absolutely central position to the danger of having a strategy which has been found out by the opponent" (J. von Neumann and O. Morgenstern. Theory of Games and Economic Behavior, Princeton, 1947, p. 147).*

*The exact wording in Neumann and Morgenstern is as follows: "...we have placed considerations concerning the danger of one's strategy being found out by the opponent into an absolutely central position." -- L.D.

In a traditional game, the striving to keep one's own strategy secret is so great that a player at times prefers not to know his own choice and therefore resorts to the mixed-strategies mechanism based on chance. By contrast, the stress in Schelling's theory is not on secrecy but on coordinating the players' intentions as well as their actions. Another peculiarity of mixed-motive games is that genuine ignorance, unreasonableness, and the absence of the freedom of choice, of communications, and initiative may be to a player's advantage if these are known to the opponent and taken into consideration by him. This paradoxical situation, wherein a player's weakness is the source of his strength, does not have an analogy in zero-sum games. Hence the abstract mixed-motive game theory is an original contribution of Schelling's which is of interest. However, the situation changes when Schelling applies this abstract theory to the sphere of contemporary international relations. Here his conclusions are far from original and can be considered only as the object of the most resolute criticism.

According to Schelling, the present relations between the two opposite blocs include, besides conflict, essentially a common interest manifested in the striving to avoid a global nuclear clash. However, that does not mean that he has developed a variant of the theory of peaceful coexistence. On the contrary, his concept is a vivid example of the pseudo-scientific substantiation of the policy of strength, constant balancing on the brink of war, and unrestrained arms race. It is easy to ascertain this by examining the basic conclusions that Schelling arrives at when trying to analyze contemporary

international conflict with the help of his mixed-motive game theory.

The thesis of the abstract theory -- that it is possible to threaten effectively with those means which bring equal damage to the threatener and to his opponent -- is transmuted into the reckless recommendation to blackmail the socialist countries by threat of a thermonuclear war. In Schelling's opinion, constant intimidation with nuclear war must become the axis of the entire foreign policy course of the United States. However, in this case the "problem" arises of making it credible that the United States will go so far as to unleash a war disastrous for itself if the demands contained in the threats are not fulfilled. To solve the "problem," Schelling recommends a whole array of means. These means cleave essentially to the spirit of the American "madmen," but the extremeness of some of them could shock even some of the adherents of the "ultras." Nevertheless, Schelling sets them forth with the same dispassionate and smooth tone with which he considered abstract game theoretic problems, and this cold smoothness creates, if you please, a more sinister impression than the ravings of the modern "madmen." First, he coolly teaches that having made a threat, the U.S. government can in one way or another (for instance, openly linking the carrying out of the threat with its prestige) place itself in situations where it is not in a position to back down. Second, from Schelling's point of view, it would be advantageous to execute foreign policy affairs so as to present oneself in the eyes of the opponent as capable of steps bordering on recklessness. Third, it is proposed to use the method

of delegation, by which the carrying out of the threat is handed over to an ally who in certain situations is capable of "harder" actions than the United States itself. For instance, in Schelling's opinion, "the proposal to put nuclear weapons in the hands of European governments is justified as strengthening [Schelling: has been explicitly argued on grounds that it would enhance] deterrence by giving the visible power to retaliate to countries that might in certain contingencies be thought more resolute [Schelling: less irresolute] than the United States" (*ibid.*, p. 142). Fourth, the United States can demonstrate its resoluteness by disrupting the channels of communication after transmitting the ultimatum. Finally, a special place among Schelling's recommendations is occupied by the threat of risking thermonuclear war, the mechanism corresponding to the above-described motorist's threat. Simultaneously with declaring the threat he proposes to take actions which would place the world at the brink of a thermonuclear catastrophe. Such actions can be limited war, individual reprisals (Schelling, for instance, proposes blockading Soviet ports, destroying ships, disrupting communications, and even occupying individual cities or delivering nuclear strikes against individual points) and other actions creating a real risk of general thermonuclear war.

Schelling attaches the greatest significance to limited war as a means of risk threat. In this connection he tries to solve the problem of how to contain the war within limits. Since under war conditions, negotiations are difficult or altogether impossible the task consists of coordinating the intentions of the opposite

sides when communications are completely or partially absent. Schelling asserts that this task is solved by means of the focal points mechanism and the informational function of moves. In doing this he cites the experience of the Second World War and the war in Korea. In the first case a tacit agreement was successfully reached regarding the nonuse of poison gases, and in the second case, regarding the nonuse of nuclear weapons. In Schelling's opinion, in these cases the focal point was the understanding on the part of both sides that it was difficult to limit in degree the employment of the stated military means and, therefore, that they had to be limited in principle by abstaining from their use altogether.

The concluding portion of the work deals with the problem of surprise attack. Schelling thinks that given the present situation of mutual distrust between the opposite blocs, a surprise attack by one upon the other is possible simply because one fears attack by the other and that, therefore, a world war may break out even if neither side wants this. In order to eliminate surprise attack and thus stabilize the international situation, Schelling proposes to deprive the opponents of first-strike advantages by permitting them to arm themselves with weapons which can survive the first strike and carry out "retaliation." In other words, for the sake of achieving a stable peace he recommends a continuation of the arms race in the area of the most advanced means of waging war (mobile rockets, atomic submarines, etc.). According to Schelling, "disarmament, in the literal sense, aimed, [indiscriminately] at weapons of all kinds or even selectively aimed at the most horrifying weapons

of mass destruction, could produce not stability but, on the contrary, an unstable situation...[Schelling: instability rather than stability...]" (*ibid.*, p. 240). From his point of view, contemporary international conflict "is a case in which an arms race does not [necessarily] lead to a more and more unstable situation" (*ibid.*, p. 237).

These are the basic features of Schelling's foreign policy conception. It must be noted that despite the endless threats with nuclear arms, he is not a conscious advocate of unleashing a thermonuclear war. He understands its destructiveness and considers the very threat of a general thermonuclear war as useful and making sense then only when fulfillment of demands is obtained without carrying it out. Having this in mind, Schelling calls his conception the "theory of the skillful nonuse of military forces" and constructs it as a strategy of peace in the nuclear age, a strategy based on the balance of terror and the arms race. However, it is not hard to ascertain that the means recommended by Schelling profoundly contradict his proclaimed goals. Adopted as the basis of foreign policy, they will not ensure peace, but, on the contrary, will lead to the most destructive use of military force in the whole history of mankind.

Indeed, for instance, what does Schelling's recommendation addressed to the U.S. government mean, to consciously place itself in a position where it is no longer possible to go back on the threat of carrying out nuclear "retaliation?" Inasmuch as the U.S. ruling circles are not noted for striving to present demands acceptable to the other side, such a recommendation in practice would mean a decisive step in the direction of a thermonuclear

war. Obviously, Schelling's counsel, consciously to conduct a reckless policy, needs no commentary. Least appropriate for preventing thermonuclear war is the method of delegation. True, there is no denying that Schelling could find executors of nuclear blackmail to fit the requirements of his conception, inasmuch as, for instance, under "European governments" one must, after all, understand West Germany. Not only are the West German "executors" "hard," but they have also managed to recommend themselves as sufficiently reckless politicians. However, is not entrusting nuclear arms to those forces, which twice already have embroiled the world in the most destructive wars in the whole history of mankind, a sure road to that thermonuclear catastrophe which Schelling, as he asserts, would want to avoid?

The same must be said concerning his recommendation to threaten the risk of thermonuclear war, in which recommendation limited war is assigned a central place. The very interpretation of limited war as a factor of peace is hypocritical enough. But that is not all that is involved. The proposed methods of limiting a war can appear satisfactory only to people devoid of a sense of proportion and reality. It suffices to recall the example with the parachutists discussed above to be convinced of how precarious are the hopes allowed, by the Schelling focal points method, for obtaining a coordination of intentions of the two opposing sides. Such a degree of reliability can do in any other situation, but when the fate of hundreds of millions of people is involved, then to settle for this is tantamount to proceeding recklessly in the highest degree. On the other hand, when Schelling

tries to appeal to historical facts and names the Second World War as an example of how military means were limited successfully, he does not consider that the Second World War quickly disproves his point of view. In fact, that conflict started as a local war, limited in the geographical sense; but subsequently it was not contained within those limits and became global. To take exception with Schelling, one may recall also his own thesis that it is difficult to limit in degree the use of the most destructive military means. It is entirely correct to extend this thesis to the concept of war in general. This means that in the present circumstances a course toward limited wars is a direct road into the abyss of thermonuclear catastrophe.

Finally, the methods which Schelling proposes for preventing surprise attack are just as unlikely to guarantee peace. In recommending a race in the latest types of armament as the means for averting preventive war, he undoubtedly finds favor with the desires of the militarist circles of contemporary America, including also the real masters of that same RAND Corporation whose orders in the area of strategic studies he is carrying out (see, for example, the journal Za rubezhom [Life Abroad], No. 43, 1967, pp. 24-26). However, these proposals perform a bad service for the cause of peace. Redundant armament always has caused aggressors to be tempted to use it at an opportune moment, and an equilibrium of the retaliation forces Schelling is counting on is too unreliable a device [on which to depend] in the circumstances of modern, leap-like development of the means of attack and defense. Furthermore the abundance of complex armaments gives rise to a

real danger of accidental war through technological causes. The crashes of American strategic bombers carrying hydrogen bombs are a convincing proof of that. The most reliable guarantee of averting preventive war, and also all war in general, is general and complete disarmament under effective international control. But Schelling rejects this road and recommends to the peoples a method which condemns them to live on a powder keg and, moreover, to pay for this a truly fantastic price in the form of exorbitant military expenditures.

The content of Schelling's foreign policy concept leaves no doubts about the class nature of his sociological researches. Schelling, like all the "professional strategists," is an ideologue of the militarist circles of the American bourgeoisie, and this to a significant extent explains the depraved nature of his conclusions. However, taking into account this one circumstance does not yet enable one to explain how it could happen that by applying to international conflict the abstract game theoretic model, which in itself does not give rise to objections, Schelling arrives at erroneous results. This particular problem concerns not only Schelling's conception alone, but to an equal extent the conception of any "professional strategist," since they all make use of a correct mathematical theory and, at the same time, arrive at erroneous foreign policy evaluations and recommendations. In order to throw light on the cause of this circumstance, [which seems] strange at first glance, it is necessary to turn to the methodological aspects of the trend under discussion. Analysis of these shows that the cause lies in the incorrect use of a theory which itself is correct. In other

words, the erroneous sociological conclusions of the "professional strategists" are determined not by game theory but by a series of methodological flaws in its application. Establishing that the game theory is not implicated in the erroneous sociological conclusions permits [one], on one hand, to remove possible unjustified reproaches directed at it, and, on the other hand, to show that the attempts of Schelling and his colleagues to rely on the authority of game theory when defending militaristic ideology are without foundations.

A necessary condition for making use of the game theory apparatus in studying social conflict is the use of a scientific sociological theory. First, the very selection of the mathematical apparatus must be based on a sociological evaluation of the phenomenon to be modelled. For instance, giving preference to zero-sum games is possible only after having made certain that the interests of the participants in the conflict are diametrically opposed, i.e., the win of one always equals the loss of the other, and alliances and agreements are ruled out, etc. Secondly, a sociological evaluation is necessary in order to set up the game correctly. The sociologist, relying on scientific theory, must explain the preference systems of the players, their possible strategies, etc. A characteristic peculiarity of the conceptions of the "professional strategists" is their confidence that there is no need for a sociological theory in addition to the game theory. However, inasmuch as it is actually impossible to avoid a sociological evaluation, its place is taken by the current notions of bourgeois sociologists and bourgeois propaganda. As a result, deliberately false

premises are introduced into the apparatus of the game theory, which naturally leads to false final conclusions.

This is precisely what happens with Schelling's conception. Schelling constructs his abstract mixed-motive theory as a copy of the relations of the type driver-robber, homeowner-burglar, etc. Then he employs this theory to describe the relations between the United States and the U.S.S.R. Why does he consider such an application possible and why does he regard his mixed-motive game theory as an adequate model for the stated area of international relations? Because Schelling is relying on a matching socio-political evaluation of the United States and the U.S.S.R., an evaluation in which the U.S.S.R. is regarded as an unrestrained aggressor and the United States as a peaceloving power striving to defend itself from a cruel and crafty enemy. Having evaluated the opposite sides in this manner and having obtained the "right" to apply the game theoretic model developed by him to the relations between the U.S. and the U.S.S.R., Schelling has performed the decisive step, since all of his subsequent conclusions and recommendations in essence follow automatically as a reformulation of the basic theses of the abstract game theoretic model. Thus, the cause of Schelling's militaristic views is not the abstract game theoretic model itself, which describes correctly the relations of the type "homeowner and thief" and "driver and robber," but the false socio-political evaluation of the area of international relations to be studied, which results in the stated abstract model being applied to an area of reality foreign to it. In turn, on the methodological plane this false socio-political evaluation is the consequence of

rejecting a scientific sociological theory when studying international conflict with theoretical game methods. This refusal bars the way to a true, scientific evaluation of the phenomenon to be modelled and places Schelling under the sway of the hardened notions of bourgeois propaganda: Schelling's initial premise about the notorious aggressiveness of the U.S.S.R. is a propaganda thesis of anti-communism.

The second characteristic methodological flaw of the conceptions of the "professional strategists" is connected with the problem of idealization. Game theory in any of its variants incorporates the following assumptions: a) every player knows his own alternatives, the alternatives of his opponent, and the corresponding outcomes; b) if the game contains a chance mechanism, then every player knows the different possibilities and the corresponding probabilities; c) every player knows his own system of preferences regarding the game's outcome and the opponent's system of preferences. The enumerated assumptions, usually summarized by the principle of rationality, are never fully realized in such complex social conflicts as international conflict. Therefore, using game theory in this area means a high degree of idealization. True, simplification in itself is not dangerous. For example, it always accompanies the application of mathematics in such sciences as physics, astronomy, etc. However, in all sciences of this kind there exists a special mechanism which controls the degree of simplification and does not permit its developing into a real error; whereas in the constructs of bourgeois sociologists, relying on game theory, an analogous mechanism is absent, the

problem itself is not subject to proof, and as a result wide opportunity opens up for arbitrary schematizations.

It must be noted that some of the "professional strategists" are aware of the difficulty noted here. Schelling is also specifically conscious of it. To him the difficulty presents itself especially acutely (for instance, if in two person zero-sum games [one wishes] to know the players' systems of preferences, it suffices to know the preferences system of one of them; but in non-zero-sum games the problem becomes significantly more complicated). Schelling even offers a method, resting on the informational properties of moves, which permits [him] somewhat to lessen the gap between the players' knowledge and the factual state of the matter. Nevertheless, this does not provide a solution to the problem. What are needed are not methods permitting [one] to lessen to some extent the degree of idealization (to eliminate it entirely is not possible anyway), but knowledge of a criterion which in each concrete situation would afford a determination as to whether or not the given degree of idealization is admissible.

Finally, the essential difficulty of the game theory application in question is connected with the quantitative expression of utilities. In order to set up the game, it is necessary to represent its outcomes as numerically defined costs; however, up to this time an objective method for solving this task has been lacking. For instance, J. Bernard admits: "So far as the sociologist is concerned, one of the most serious difficulties is that involved in assessing costs. Unlike economic costs, which can [often] be translated into monetary units or

even military costs, which can often be translated into quantitative units...the costs in many sociological conflict situations are [in terms] difficult to state quantitatively. They may be in the nature of 'honor,' 'face,' 'status' or subjective psychological mechanisms [such as compensatory devices or escape mechanisms]. What exactly, is the unit of measurement in such cases? A great many sociological payoffs are of this nature" J. Bernard, "The Theory of Games of Strategy as a Modern Sociology of Conflict," The American Journal of Sociology, No. 5, 1954, p. 422). The difficulty noted is especially great in such complex situations as international conflict. However, the "professional strategists" prefer not to take notice of it. As a result, in their works there is an over-abundance of arbitrary quantitative estimates of utilities, which, naturally, renders the resultant conclusions and recommendations unfounded.

In summing up, it can be said, that the theoretical constructs of the "professional strategists" are a typical example of the pseudo-scientific conceptions of bourgeois sociologists, wherein shrewd speculation on valid scientific knowledge is used to substantiate the ideology of the reactionary classes. In this connection it must be remarked that the criticism set forth must not be understood as a rejection of the application of game theory to the analysis of international relations. If one successfully overcomes the methodological difficulties connected with the problem of idealization and the numerical expression of utilities, then within the framework of scientific sociology the application of

game theory to the area under discussion can become fruitful.

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